



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/722,123

11/26/2003

Michihiro Shibata

Q78700

4843

23373

7590

09/01/2006

SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

JOLLEY, KIRSTEN

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 09/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/722,123

Applicant(s)

SHIBATA, MICHIIRO

Examiner

Kirsten C. Jolley

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-5 and 7-13 is/are pending in the application.
- 4a) Of the above claim(s) 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-5, 7-11 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. The 102(b) and 103(a) rejections over Walters et al. have been withdrawn in response to Applicant's cancellation of claims 1-2.

2. Applicant's arguments filed June 16, 2006 have been fully considered but they are not persuasive.

With respect to the 35 USC 103(a) rejections over Arioka in view of Shiau et al., Applicant argues that Shiau is non-analogous art. Applicant states that Shiau et al. relates to a method for providing a uniform coating of photoresist over a substrate for use in the fabrication of integrated devices and circuits, thus Shiau is not in the same field of endeavor as the present invention. The Examiner disagrees. Shiau is in the same technology of spin coating as Applicant's invention, and it is well known that similar mechanical principles apply whether applying photoresist materials or optical dye solutions. It is the Examiner's position that Shiau is both in the same field of endeavor as Applicant, as well is reasonably pertinent to the particular problem with which the inventor is involved, i.e., application of a uniform coating on a substrate by a spin coating process. The primary reference of Arioka has been cited as evidence that similar principles apply in both photoresist and optical dye coating processes -- Arioka teaches that similar issues and similar processes may be used in coating resist on a wafer in a semiconductor manufacturing process as coating light-absorbing dye in an optical disk manufacturing process (paragraphs 0001 and 0002).

Art Unit: 1762

Applicant similarly argues that Shiau is non-analogous art with respect to the primary reference of Arioka. The Examiner disagrees for the same reasons as discussed in the paragraph above.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant further argues that although Arioka mentions that the process may be used for manufacturing semiconductors, it does not mean the method of Shiau et al. can be used for manufacturing optical recording media. The Examiner disagrees. It is well known in the spin coating art that similar mechanical and physical principles are applied in spin coating both optical recording media and semiconductors. As discussed above, the primary reference of Arioka even teaches such. Applicant's statement "Since a photoresist coating liquid *may have* different properties (such as viscosity) from a dye solution applied to optical recording media, there is no support for the assumption that the method of Shiau et al. can be combined with Arioka to make optical recording media [emphasis added]" is not convincing.

Claim Rejections - 35 USC § 103

Art Unit: 1762

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3-5, 7-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arioka (US 2002/0037366) in view of Shiau et al. (US 5,985,363).

Arioka discloses a method of producing an optical recording medium by coating a dye solution on a substrate by a spin coating method and drying the dye solution to form a dye recording layer. Arioka generally discloses a process where dye solution is dropped on the substrate while the substrate is either stationary or rotating, and then rotating the substrate at a high speed to form a thin film on the surface (paragraph 0039). Arioka also teaches that similar issues and similar processes may be used in coating resist on a wafer in a semiconductor manufacturing process as coating light-absorbing dye in an optical disk manufacturing process (paragraphs 0001 and 0002). With respect to Arioka's process, Arioka teaches that the substrate is a polycarbonate resin substrate having spiral grooves therein (paragraph 0049), as is known in the optical recording medium art. Arioka lacks the specific details of spin speeds and spin times, and one skilled in the art would have been motivated to look to the prior art for exemplary teachings of specific spin coating process parameters to be used in Arioka's dye solution coating process.

Shiau et al. is cited for its teaching of applying a uniform coating of photoresist solution over a substrate having varying surface topography. Shiau et al. teaches that a conventional process of applying coating material at a low spin speed and then spinning at a faster speed to

Art Unit: 1762

distribute the coating material results in the appearance of radial striations of uneven coating thickness over the surface (col. 3, lines 51-65). Shiau et al. discloses a method of improved coating uniformity on a substrate surface having varying surface topography using a process of first dispensing coating material at a spin speed of 1500-2500 rpm, then performing a low-speed rotation step of rotating the substrate at a speed lower than a speed at the beginning (and end) of the supply of the coating solution of 1000-1500 rpm, and then accelerating the spin speed to a rate of 3000-5000 rpm, and then finally decelerating the spin speed to 1000-3000 rpm (col. 4, line 63 to col. 5, line 34). [It is noted that claim 3 only requires that the low-speed rotation step is performed at a speed lower than a speed at the beginning of supply of dye solution or than a speed at the end of supply of dye solution.]

It is the Examiner's position that it would have been obvious to one having ordinary skill in the art to have incorporated the teachings of Shiau et al. regarding spin speeds and times, including the use of a low-speed rotation step after the end of supply of coating solution, in the dye solution coating process of Arioka in order to produce an improved coating uniformity and reduced radial striations since Shiau et al. is similarly related to coating on a substrate having an uneven topography, and because Arioka discloses that similar issues arise in coating photoresist coatings on semiconductor substrates and dye solutions on optical recording medium substrates.

As to claim 4, Shiau et al. teaches that the low-speed rotation step starts immediately after the end of supply of its coating solution.

As to claim 5, Arioka teaches using a dye solution having dye in an amount of 4% (paragraph 0047). However it is the Examiner's position that it would have been obvious for one having ordinary skill in the art to have determined the optimum amount of dye through routine

Art Unit: 1762

experimentation depending on the particular dye used, the desired dye coloring, etc. in the absence of a showing of criticality.

As to claims 7-9 and 13, it is well known in the spin coating art that the spin speeds and spin times used are optimized through routine experimentation and such is within the skill of an ordinary artisan, depending upon the particular coating solutions used, the desired coating thickness, the size and topography of the substrate, etc. It is well settled that determination of optimum values of cause effective variables such as these process parameters is within the skill of one practicing in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

As to claims 10-11, since Arioka is silent with regard to the ambient temperature and relative humidity during its coating operations, it would have been obvious to have performed the coating in Arioka at room temperature and at ambient/normal humidity levels. The claimed temperature and humidity ranges encompass room temperature and ambient/normal relative humidity levels.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yoshihara (US 6,117,486), Matsuura (US 2003/0087535), Lee et al. (US 6,890,595), and Sanada et al. (US 5,989,632) are cited because they disclose the conventionality of a low speed rotation step after the supply of a coating solution in a spin coating process.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C. Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Wednesday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/722,123

Page 8

Art Unit: 1762


Kirsten C Jolley
Primary Examiner
Art Unit 1762

kcj